VOLUME XXV NUMBER 9

THE AGRICULTURAL STUDENT

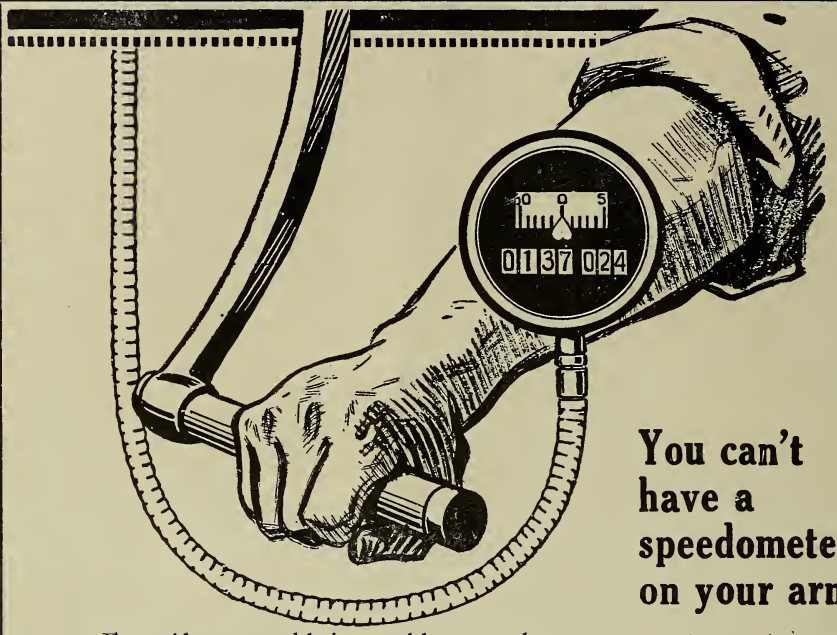
OHIO STATE UNIVERSITY, COLUMBUS, OHIO

MAY, 1919

CONTRIBUTORS

J. L. EDMONDS	J. S. COFFEY	M. R WRIGHT
WAYNE DINSMORE	C. T. CONKLIN	LENA BUMPAS
M. E. LAIRD	E. W. MENDENHALL	L. N. GEIGER

15c PER COPY $1.00 PER YEAR



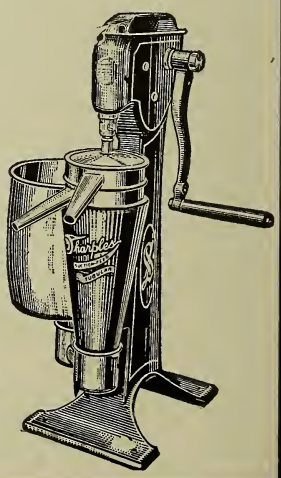
You can't have a speedometer on your arm

Even if you could, it would not make you turn at a certain speed every time you used a separator. Own a separator that you do not have to coddle by turning at a fixed speed or by using speedometers and other contraptions. Do the sensible, practical thing and buy a

SHARPLES SUCTION-FEED CREAM SEPARATOR

"Skims clean at any speed"

American ingenuity has perfected a principle in the Sharples that enables you to turn the handle fast, slow or "as you like it." You can loaf along, or speed it up—and you do not lose a cent's worth of butterfat nor change the thickness of your cream. From a straight, money-making standpoint alone, the Sharples is the only separator you can **afford** to buy.



Your nearest Sharples dealer will tell you the rest of the Sharples story or send for our catalog and Sharples Book of Old Songs, addressing Dept.

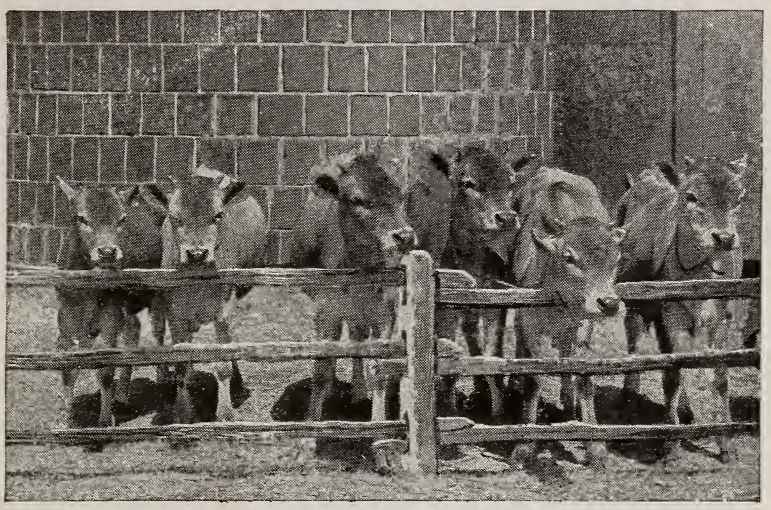
"There are no substitutes for dairy foods"

SHARPLES SEPARATOR COMPANY

WEST CHESTER, PA.

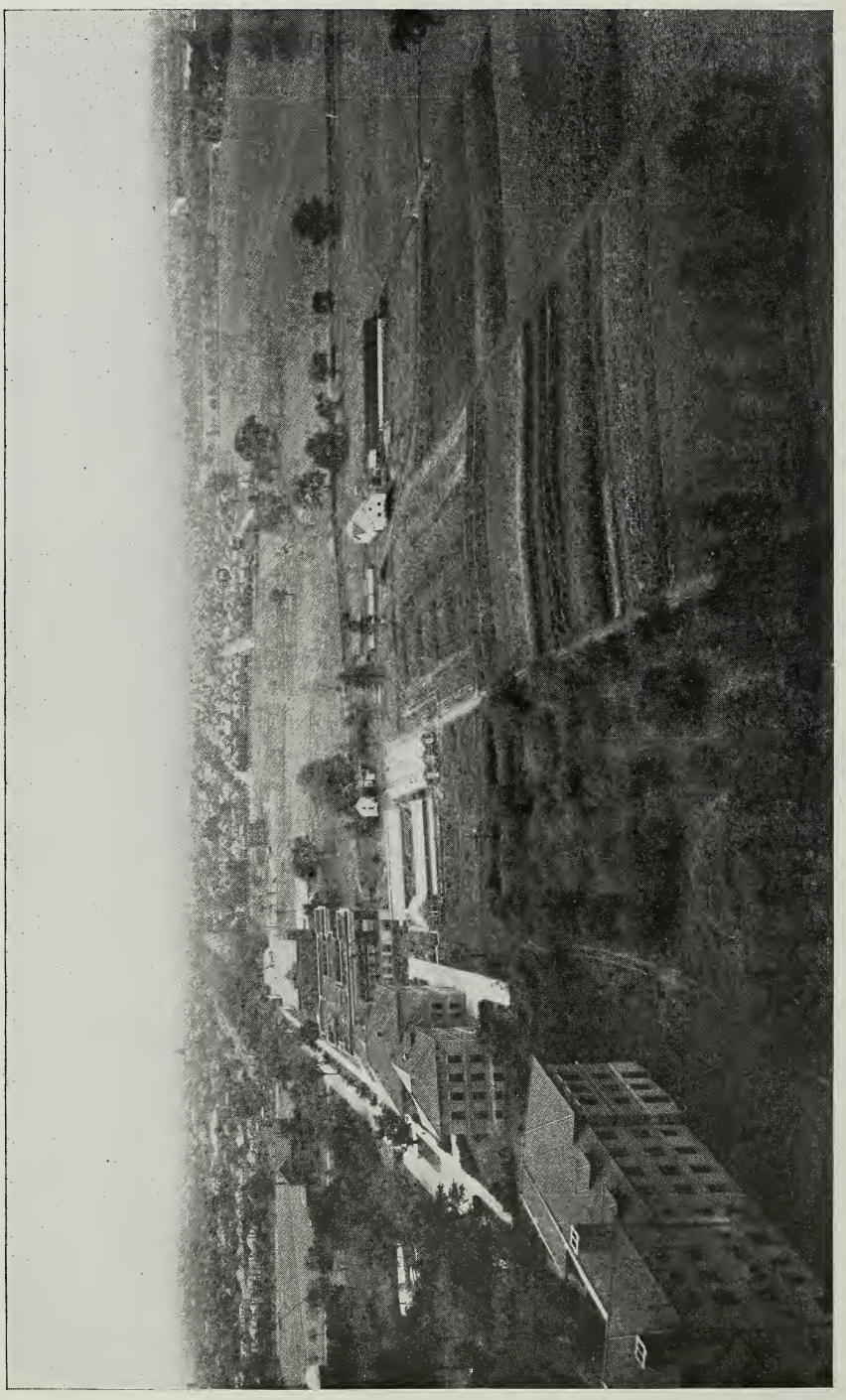
Sharples Milker—the ONLY Milker with a Squeeze
Send for Catalogue

Branches: CHICAGO, SAN FRANCISCO, TORONTO



CONTENTS

Entered at the Post Office at Columbus, Ohio, as Second Class Matter



AGRICULTURAL COLLEGE CAMPUS AND FARM
OHIO STATE UNIVERSITY

The Agricultural Student

VOL. XXV. OHIO STATE UNIVERSITY, COLUMBUS, OHIO, MAY, 1919 No. 9

GROWING DRAFTERS

By J L. Edmonds, Professor of Animal Husbandry, University of Illinois.

NOT only is it true that the system of feeding and management will vary with respect to the end desired, but also that there may be several ways of "getting there" when similar results are to be attained. It is also true that the possession of high class, well-bred individuals is a great asset to the feeder. The trotting-horse trainer's reputation is benefited by having pupils that have plenty of natural speed and other almost equally important points which enter into the make-up of a successful race horse. The developer of draft horses is similarly helped by having exceptional merit in his youngsters to begin with. Feed of itself will not make a "topper," nor will breeding—it takes them both. Buyers generally are becoming more particular as to the necessity of this combination.

Keeping well-bred young stuff, particularly good pure-breds, in thrifty, growing condition at all times is necessary for the best development and is also most profitable because it generally permits selling to advantage at an early age. Taking the two extremes, heavy feeding ruins too many. Certainly no real good comes—and much harm may result—from getting the weight of a two-year-old on a yearling or that of three-year-old on a two-year-old. Suckling foals will get plenty of grain by eating with their dams, if the dams will permit it and they themselves are well fed. We all like the size that comes from shapely muscles, and quality of bone rather than excess of fatty tissue. Excess fat not infrequently appeals to the eye of the novice, but it does not help the game, in the long run, to have beginners start out with highly-conditioned individuals that lack the essentials fundamental to the make-up of "real ones."

Starvation rations not only tend to make small size but small prices and delayed selling of surplus. Such feeding does not permit even the owner to form a proper estimate as to the outcome of his young things. This point is of great importance to the breeder who is striving to breed each succeeding generation better than the one preceding it.

Our Middle West is naturally a draft-horse country, because where the soil has been well taken care of, it grows the legumes, clover and alfalfa, also good blue grass for pasture, timothy, oats, and corn. No doubt it is often advisable to feed in limited amounts such by-products as bran. However, outstanding, good individuals have been grown on a farm-grown ration.

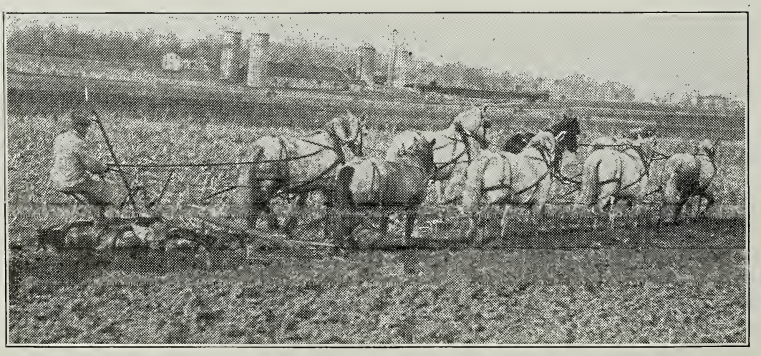
Colts thrive the best when the rations contain considerable variety in kinds of feed and proper quality and quantity of nutrients. Some of the best-grown ones at maturity have been handled during the fall and winter in about the following manner: One good feed of legume hay per day, preferably in the evening, access during the day to a blue grass pasture which was allowed to rest and

grow during the latter part of the summer, and a chance to eat whatever they wish in the way of good corn stover or bright oats straw. The amount of grain will vary with respect to individuals, and where one wishes to do a real high class job of feeding, the grain ration should be given individually. A bone and muscle-making roughage cuts down materially on the grain requirement.

Oats is a splendid grain feed, and so is corn when used in connection with the legume hays which are rich in protein and mineral matter, especially calcium. The eye of the feeder will have to tell him how much grain will be required along with his pasture, alfalfa and clover hay, corn stover, oats straw, and similar roughages.

The importance of having good pastures cannot be over-estimated. Good pure-breds will, however, more than likely make profitable returns from being fed a reasonable amount of grain on pasture. This I may say is done, particularly with young stallions, with painstaking care even in sections where oats grow heaviest and the pastures are considered among the best in the world. If intended for show or sale as yearlings or two-year-olds, it will undoubtedly be required. Oats, when fed whole to colts running on grass, do not seem to digest as well as they should; at least it is true that a considerable number of grains may come through whole. Crushing will eliminate this trouble and quite a number of breeders think highly of it. A few ears of corn as extra feed in connection with good pasture work well in practice. The liberal feeding of green corn when the pastures dry up helps to tide over a spell in the summer when, due to hot weather and flies, young stuff is likely not only to stop gaining but even to lose some of the weight put on in the spring and early summer.

Liberal feed, good water, and regular salting, together with unrestricted opportunity to exercise, grow youngsters that are well worth while to use and look at when mature. For stuff that is running out, not much grooming from the standpoint of health is required. When an animal is being fitted for show or sale, appearance is of more importance, but even then it should not be discriminated against for showing a little of the roughness incident to a healthy outdoor existence, provided it is right in the essentials. Grooming may be passed over as mentioned above; the proper leveling of the feet with a rasp every few weeks should never be avoided. Even if one is short-handed, care of the feet should not be neglected.



MULTIPLE HORSE HITCHES

By WAYNE DINSMORE, Secretary of the Percheron Society of America.

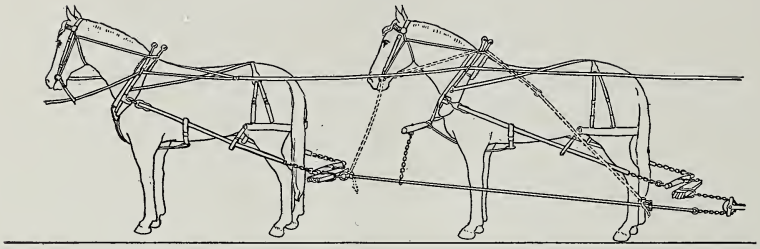
THE majority of farms in Ohio are irregular in shape. They do not readily lend themselves to the use of the larger types of labor-saving machinery used in the west, yet on a large proportion of Ohio farms two bottom gank plows are already in use and more will be introduced and used as soon as their labor-saving value is fully recognized.

One serious objection which Ohio farmers have had to two bottom plows has been in the power required to pull them. The only hitch used to any extent on these plows is the four abreast hitch, although in relatively few cases a five horse hitch is seen. The four abreast hitch has always been considered a faulty hitch and experiments carried out during this past year by the Illinois Experiment Station have shown conclusively that when four horses are hitched abreast on a two bottom gang plow they are pulling about twenty-five per cent more than is necessary, as side draft increase the traction required on the plow that much. This side draft is entirely eliminated when the teams are strung out with one pair in front and one on the wheel. In other words, by stringing the horses out tandem fashion an absolutely true line of draft can be obtained, side draft being entirely eliminated, and the twenty-five per cent unnecessary pull done away with. Aside from this, the teams work to better advantage as the horses are spread farther apart, secure more air, work more freely, and are not trampling or crowding each other on the turns. This tandem hitch has been used to some extent in the past but has been objected to by many practical farmers because the angle of trace did not bear the same on the lead team as on the wheel team, with the result that the lead team was working in more distress than the team next to the plow. This is known to be a fact, but this defect has been eliminated in the new multiple horse hitch invented by Prof. White and brought to final perfection in the experiments carried out by the Illinois Experiment Station and the Percheron Society of America.

It became evident that it would be necessary to have these hitches patented in order to have them manufactured on a comprehensive scale by a company which could advertise and introduce them into such general use as their importance justifies. No conflicting patents were found and patents have been applied for. The manufacture of these hitches has been undertaken by The Multiple Hitch Company, Union Stock Yards, Chicago, Illinois, which is now prepared to furnish them to all who desire to obtain them.

One great beauty about the hitches lies in their flexibility. The six-horse hitch can be purchased for use during the fall when the ground is dry and hard; and when spring comes and the ground is soft the rear unit can be dropped off and the hitch used as a four-horse unit and it is also available for use on the corn harvester or grain harvester, where the four-horse unit with pairs strung out is much more satisfactory than the four abreast hitch.

The great value of these hitches to farmers in increasing the power which they have on their own farms is such that the officers of the Percheron Society and those of other record associations have gone on record in favor of



their general introduction and use. Demonstrations have been held this spring with the six-horse multiple hitch on the farms of W. H. Butler, Sandusky, Ohio, and W. T. Agerter. Lima, Ohio, and on the latter named farm the horse hitch may possibly be shown on a three-bottom plow, although definite arrangements have not yet been made for an exhibition of the eight-horse hitch at this point as it is not believed that any considerable number of Ohio farmers are prepared to use the three-bottom horse drawn plows with the eight-horse hitch. Great efficiency results from the use of these larger hitches, however, for one man can plow fifty acres per week without trouble when using the three-bottom horse drawn gang plow where fields are approximately half a mile in length.

The principle of driving these strung out teams has been adapted from the plan long used on the Pacific Coast where it is known as "tying-in and bucking-back." Full details will be furnished to any parties interested, who have only to write to the Percheron Society of America, Union Stock Yards, Chicago, Illinois.

HITCHING ABREAST INCREASES THE DRAFT TWENTY-FIVE

ORGANIZE THE FARM BUSINESS FOR MAXIMUM PROFIT

By M. E. LAIRD, County Agricultural Agent of Huron County.

DURING the spring of 1918 a survey was made in Huron County for the purpose of securing some reliable figures and facts to be used in assisting farmers in the county to organize the enterprises of their business for maximum profit and to use their labor most efficiently. With the present high cost of production these things are especially important.

LABOR EFFICIENCY

During the war the labor shortage became extremely acute. This condition will be relieved somewhat, yet good help will be difficult to secure for some time. On some farms the work has been rearranged so that from fifty to one hundred per cent more is accomplished with the same amount of labor. This has been brought about in various ways, depending somewhat upon the man and the condition of his farm.

A time standard for doing a certain piece of work has been determined from investigations of farm conditions in all sections of the country. This standard applies to the number of days of work required to produce an acre of corn, oats, wheat etc., as well as that required in the ordinary care of the various types of farm animals. It is possible therefore to determine the number of actual work days that will be required under average conditions to take care of all the work on the farms surveyed.

Records were taken from fifty-eight farms. These were then arranged into two groups. Those men who were getting more productive work per man than the average were put in the efficient class and those who were doing less work per man were placed in the inefficient class. The following table shows the variations in the efficiency of the labor on the several farms studied:

VARIATIONS IN LABOR EFFICIENCY

	Acres Crops Raised Per Man				Animal Units
	Corn	Wheat	Oats	Hay	Per Man
Relatively Inefficient	10	10	8	10	9
Efficient	17	10	10	14	12

The man in the efficient group produced fifteen more acres of crops than the man in the inefficient. Likewise more livestock was cared for by the more efficient men. In order to show the relation of the efficiency of labor to the profits of the business, fair farm values, such as were in effect in the county during 1917 and 1918, were placed on all the crops raised on each farm. Thus the total value of the crops raised per man was secured. The total average value of crops raised per man in the inefficient group was $1745; in the efficient group $2344. This difference of $600 is alone sufficient to make the difference between a profitable and unprofitable farm.

The efficient farmers kept more horses than the less efficient which accounts in some measure for the larger acreage of crops handled per man. This substitution of horse power for man power is a profitable practice. Horse power does not cost much over $125.00 per year, while it is hard to get a man for less than $500.00. Larger machinery and better horses may be considered a profitable investment therefore on a good many farms.

It is interesting to note that the labor cost per work day on the efficient

farms was $1.67 whereas on the inefficient farms it was $2.62. This figure secured by dividing the total labor cost (including that of the operator at $500.00 a year) by the total productive work days on the farm. The efficient man therefore is getting his work at a much lower cost which naturally has an important bearing on the profitableness of the business.

CROP YIELDS

The crop yields secured on a farm are dependent quite largely upon the farmer himself. While a man can not take a run-down farm and secure yields at once equal to those of his neighbor who has built up his land, yet there is no doubt that he can increase the yields very materially by proper management and planning. This factor affects the success of the business to a considerable degree. In the following table the farms having yields below average are placed in one group and those above average in the other. The variation in yields is quite noticeable.

YIELDS PER ACRE

	Corn	Oats	Wheat	Hay
Above Average	47 bu.	57 bu.	35 bu.	1.9 T.
Below Average	36 bu.	52 bu.	35 bu.	1.4 T.

At first thought one might conclude that the farms in the above-average group secured higher yields because they had a soil which was naturally more fertile. However, this difference is found in the same section and between farms which had originally the same amount of fertility. The farmers who secured the higher yields used better rotations, more tile drains, and are keeping more live stock. It is interesting to note that on the thirty-one farms below the average, forty-eight per cent of the crops grown were fed, while on the twenty-seven above-average, fifty-eight per cent of the crops were fed. This indicates the value of live stock in building up a farm. It is not to be denied that under war conditions a man who sold most of his crops may have received more money than the man who fed them but he has borrowed from the future to do so. Unless some of this money is spent for fertilizer his yields will soon decrease.

IMPORTANCE OF GOOD STOCK

Another factor which has an important bearing on the profits of the farm business is the quality of the live stock kept. It has been demonstrated many times that live stock of good quality makes more efficient use of feed than live stock of poor quality. Even the best feeder cannot secure as high a return with poor live stock as he can with good live stock. The inefficient feeder may make some profit on good live stock, but with poor animals he will have an actual loss.

We found in studying the fifty-eight records that a great variation existed in the profitableness of the live stock feeding. On the twenty-eight farms receiving the best returns from live stock feeding, every hundred dollars' worth of feed fed, returned $159.00, while on the thirty farms below average only $128.00 was returned per hundred dollars' worth of feed. We also found that it required $78.00 worth of feed for each animal unit on the better farms and $95.00 for each on the poor farms. It was also true that the farms above average were keeping more pure-bred live stock than those below-average. This does not mean that it is more profitable for the average farmer to keep all pure-bred live stock, but it does show that better results are secured by keeping up the quality of the animals by the use of pure-bred sires.

COMPARATIVE PROFITS WITH SHEEP

On account of the fact that Huron County is one of the leading counties of the state in the sheep industry we felt that it would be well to compare the results secured on different farms from this class of live stock. There were thirty-seven of the fifty-eight farms on which sheep were kept. Twenty-one of these secured returns below the average, sixteen above. The table shows the average returns in each of the two groups.

RELATIVE RETURNS FROM SHEEP

	Number Farms	Net Receipts Per Sheep	Return per $100 Feed	Average No Sheep	Wool Clip Per Sheep
Below Average ------	21	$11	$99	50	7 lbs.
Above Average ------	16	$19	$167	64	9 lbs.

The difference in the returns secured is due to better methods of handling, better methods of feeding, and better quality of sheep. A difference of eight dollars per head in net returns is certainly worth going after. It will be noticed that the farms above average are keeping a larger number of sheep which with the larger return per head makes their business considerably more profitable. No effort was made to distinguish between fine wool and medium or coarse wool breeds. The net receipts per sheep were increased by the heavier clip of wool secured by those in the above-average group. With the present prices of wool, this phase of the business should not be overlooked.

THE BUSINESS SIDE OF FARMING

As stated in the beginning of this report, these records have been secured to assist the farmers in determining what each part of his business is doing, as well as the profitableness of the business as a whole. If some part of the business is not returning as much as it should, it is possible to organize it so that is can be made profitable. This, however, is more or less an individual problem. Each farm has factors which affect certain phases of the business differently from that on other farms. It is hoped that the report of this survey may have some suggestions in it that will help farmers to make a more profitable organization of their business and secure a greater efficiency in the use of their labor.

FORAGE CROPS FOR HOGS

By JOEL S. COFFEY, Assistant Professor of Animal Husbandry, Ohio State University

NO swine grower can afford to produce pork without the aid of forage crops. Forage crops in connection with growing and fattening swine reduce the amount of necessary grains and purchased feeds, save labor, promote sanitation and health, increase rate of gains, aid in satisfactory distribution of the manure, facilitate in the destruction of weeds, and lend to the utilization of what might be considered waste ground.

By the use of forage a saving of approximately twenty percent of the total grain necessary to feed in the dry lot is accomplished. Furthermore, the greater portion of the saving is in the form of the more expensive protein feeds, that is, providing the proper kind of forage is available. In fact the

amount of protein supplement necessary to fatten hogs in the dry lot can be lessened nearly fifty per cent by the use of well chosen forage.

There is much experimental evidence substantiating the assertion in the foregoing paragraph. As an example of such the following table is taken from the Kentucky Agricultural Experiment Station Bulletin No. 175.

EXPERIMENT 8, TABLE 7.

Experiment began September 10, 1910, and closed January 12, 1911.

	Lot 1. Corn meal, fed in lot.	Lot 2. Corn meal, Clover pasture, Rye pasture.
Number of pigs in experiment	3	7
Days on experiment	125	124
Average first weight, lbs.	64	66
Average final weight, lbs.	150	215
Average gain per pig, lbs.	86	149
Daily gain per pig, lbs.	.688	1.202
Total pounds grain fed	1411	3987
Average grain eaten per pig daily, lbs.	3.76	4.59
Pounds grain per 100 lbs. gain	546	382
Cost[1] of 100 lbs. gain	$6.39	$4.47
Pounds gain per bushel (56 lbs.) grain	10.24	14.65
Cost of 1 bushel (56 lbs.) grain	$0.655	$0.655
Amount realized per bushel (56 lbs.) grain, pork at $7.00	$0.717	$1.026
Amount realized per bushel (56 lbs). grain, pork at $8.00	$0.819	$1.172

[1] Corn, 60 cents per bushel plus $2.00 per ton for grinding=$23.42 per ton.

Most of the items in this experiment explain themselves. The author of the Bulletin has the following to say, "It will be noted in this experiment that the lot on pasture receiving corn meal made seventy-three per cent larger gains per pig than did the lot receviing corn meal alone in the dry lot. The use of pastures also increased the appetite of the pigs, for they ate twenty-two per cent more grain per pig daily than did the lot receiving corn in the dry lot."

In view of all the beneficial results obtained through the use of forage. It should be a matter of much concern to the swine grower, that as much forage as possible be provided throughout the year. In order to realize this some thought must be given to a succession of crops suitable for forage purposes.

The crop given first consideration is rye, because in Ohio it is the first crop ready for use in the spring. Rye grows on well drained ground, is ready for use the latter part of March or the first of April. It does not require a great acreage of rye to tide things over until forage is ready. A couple of acres will furnish a run for fifteen or twenty brood sows and their litter for a period of four weeks, and the benefit derived cannot be questioned. For every twenty head of fattening hogs or shoats one additional acre of rye should be provided.

Following rye, clover comes as a very logical crop. In this connection it might be said that there is no better forage for hogs than clover. It is most palatable and next to alfalfa yields best results. An acre of clover, if a good stand should furnish pasture for fifteen shoats.

Because of its rapid growth and luxurious production along with its value as a hog feed, rape is a forage worthy of much consideration. It can be sown during any of the spring and summer

months and in five or six weeks time under favorable conditions be ready for grazing. Rape is a splendid crop to have access to in case such forage as clover, alfalfa or blue-grass become inaccessible or becomes to advanced in growth to be palatable. In fact experimental data show that hogs on rape make as rapid gains as on most any other forage.

At Ohio State University it is the plan to make about three sowings of rape on successive dates of three or four weeks apart, so that it will be available throughout the summer months. The second or third sowing is made usually in the lots used for rye forage during the early spring months. Oats are always sown with the first rape lots, and sometimes with the second sowing of rape. It has been observed that when the hogs are turned in lots containing rape and oats that the young tender oats are eaten first, after which the rape is grazed down. An acre of rape and oats forage should furnish pasture for fifteen hogs for a period of four or five weeks. Rape under favorable conditions will grow up and make pasture again after being grazed down.

The value of alfalfa as a forage for swine is great. However, its limited adaptability and the fact that it does not stand grazing well under Ohio conditions prevents its extensive use for swine pasture.

The following table furnishes information with reference to the sowing of different kinds of forage, all of which are adapted to Ohio conditions. The cost of the seed is an item which will vary greatly from year to year.

TABLE II—PLANTING TABLE OF FORAGE CROPS FOR HOGS.

CROP	Date of sowing	Method of sowing	Rate of sowing per acre	Time from sowing until ready for use	Approx. lgth of time crop affords pasture	Approx. cost of seed
Rape	Apr. 1 to July 10	Rows or broadcast	2 to 6 lbs.	6 to 8 weeks	4 weeks	6 to 10c per lb.
Cowpeas	May 25 to July 15	Rows or drilled solid	½ to 1 bu.	80 to 100 days	4 to 6 weeks	$2.25 to $3.50 per bu.
Soybeans	May 20 to July 15	Rows or drilled solid	½ to 1 bu.	70 to 90 days	4 to 6 weeks	$2.25 to $3.50 per bu.
Canadian field pea	Mar. 20 to April 30	Drilled or broadcast	1 to 1½ bu.	6 weeks	3 to 5 weeks	$2.50 to $3.50 per bu.
Rye	August or September	Drilled or broadcast	1 to 1½ bu.	Late autumn or e'rly sprng	4 to 6 weeks	75c to $1.25 per bu.
Oats	Mar. 20 to April 10	Drilled or broadcast	2 to 3 bu.	5 to 6 weeks	4 to 6 weeks	40c to 70c per bu.
Vetch	July 1 to Sept. 15	Drilled	40 to 60 lbs.	April and May next year	4 to 6 weeks	10c to 15c per lb.
Crimson Clover	July or August	Broadcast	10 to 12 lbs.	8 weeks	3 to 4 weeks	$8.00 to $12.00 per bu.
Sorghum	May 10 to	Rows or drilled	Rows 15 lbs. 4 to 8 lbs.	6 to 8 weeks	4 to 6 weeks	6c to 10c per lb.
Root Crops	June 15 May 1-20	Rows	Drilled 30-45 lbs.	4 months	According to quantity	25c to 50c per lb.
Artichokes	Autumn or spring	Like Potatoes	10 to 15 bu.	Following autumn	According to quantity	$1.25 to $3.00 per bu.
Pumpkins	May 15 to June 15	Hills	4 to 6 lbs.	120 days	According to quantity	20c to 35c per bu.

FROM CORN STALKS TO PORTERHOUSE

By C. T. CONKLIN, In Charge of Cattle and Meats, Ohio State University

CAN the beef steer come back? Is there a fighting chance of his regaining his former popularity in Ohio? Just what is the steer feeding situation? Ask these or similar questions of the farmers of our commonwealth and the answers will be as varied as the cattle these farmers own. Not a few will repeat the venerable adage that beef cattle are not adapted to high priced land. Some will say that feed is too high to profitably finish cattle. The theoretical possibilities of the cropping system when supplemented by commercial fertilizers will prompt a doubtful answer from others. The growth of the dairy industry has drawn the attention of not a few who shake their heads in grave doubt regarding the steer business. Still other wiseacres, members of the soap-box forum, will mathematically show that cattle cannot possibly be fed at a profit.

On the other hand go into the western counties of Ohio, and in almost every case a few of the leading farmers in each community will be feeders of beef cattle. Talk with graduates of our Agricultural College and a surprisingly large number of them are interested in the commercial beef cattle business. County Agents, the rural press, and others they know, agree that the beef steer is regaining his prestige in the Buckeye barn-yards. What are reasons for these contradictory statements on such a simple question?

In the first place it is human nature to base an opinion on personal experiences. The small farmer on eighty acres cannot possibly see any hope for the beef steer because his farm is too small to produce a surplus of roughage for more than his work horses and a few milch cows. Most tenants with short-time leases and limited means can not hope to ever embark in the beef business. The investment is too great; the returns too slow. The dairy cow permits a big business on small acreage and with limited capital, while the returns are constantly coming in. So first of all, let's recognize the fact that the steer feeding business is quite frequently best adapted to the large operator, with his bigger scale of business. No wonder the most successful farmers are often steer feeders. Whether they feed steers because they are successful, or are successful because they feed steers is a debatable question.

Other reasons for this increasing popularity in the cattle business is the fact that steers have been cared for with the minimum amount of labor in times when labor has been a limiting factor in farming operations. Moreover, a shortage of beef and a rising cattle market have resulted in good profits during the past two years. Furthermore, a soft corn crop was remuneratively salvaged in 1918 with the beefy tribe. All these have been important in putting the steer in the center of the barn yard stage, but it has been improved methods of feeding that have really turned the spot-light on this bovine gormand.

Could a steer feeder of a century ago turn over in his grave and hold a post-mortem conference with this withering worthy, we would doubtless hear a tale of fascinating mean. It would be a yarn of the days when Ohio was still in her political swaddling clothes, when corn was burned for fuel, or distilled into the omnipresent whiskey, or fed for many months to some

heavy steers. Then those steers were driven off to distant cities like creaking wagons, carrying the golden crop from the Ohio valleys to market. And like the wagon going to market all the corn was loaded on that could possibly be carried.

No doubt if this specimen of defunct protoplasm cared to further converse he would tell of later days when hardy men left the Ohio settlements to go westward, and there raise cattle on free lands. He would tell of financial losses that resulted in the east in the days of overproduction in the west and how sick of heart and lean of purse, Ohio beef feeders beat their feed bunks into firewood and went out of the cattle business.

And then how sweet it would be to grasp his rattling metacarpels and tell him how better days have followed since the times when he corned a steer. We would tell him of the first attempt to balance a beef steer's ration by feeding clover hay with corn, and how satisfactory had been the results. Then the virtues of combining cottonseed meal with corn and clover hay wuld be recited, for this was an epoch making discovery in cattle feeding.

Then the general use of the silo and the greater economy of gain which resulted would make an interesting narrative. How important to show this antiquated agriculturist that the problem is now to get the steer to consume more roughage and less grain. How essential to point out that the steer feeding of the future must be on this basis because other animals, including man can make more economical use of corn than can the steer! Tell him of greater profits from feeding steers on ensilage rather than on shock corn where most of the roughage is wasted. Point out that it is possible to feed steers with practically no corn at all except that

CAN BEEF CATTLE COME BACK?

in the silage. Tell him all these things and then put him back in his grave before he asks to see silage fed steers for he might be disappointed.

In fact not a few stockmen are disappointed with the gains and finish of steers which have been heavily fed on silage, but that does not lessen their profitability. Higher prices for meat are forcing the consumer to demand and pay higher prices for the cheaper cuts and grades of meat. Moreover, present values for hides and other by-products are helping to keep up prices on cheaper cattle. So as a consequence, silage-fed cattle which sell as "butcher-stuff" have been proving quite profitable.

Not a few of the Ohio Agricultural College alumni are finding that the steer can be a very profitable scavenger of roughage, and that silage is the basis of present day beef-making.

E. H. Root, ex-'15, has two silos on his farm at Genoa, Ohio, and thirty head of steers have consumed one hundred seventy tons of silage and some five tons of cotton seed meal during the past winter. That alone has been their ration and the cattle were in good enough "butcher shape" to recently sell at $14.05 on the Pittsburgh market, whereas they were put into the feed lot at $10.50 per hundred weight. This is the extreme manner of feeding ensilage to cattle but it simply shows the possibility.

Clell Soleather, '13, has been feeding steers for five years on his Wood County farm, and every year silage and cottonseed meal have turned the trick with very profitable steers. Paul Smith, '14, reports cattle feeding as his future line of business on a well managed farm near West Unity, Williams County. Fred Perry, '15, marketed the corn crop from his half-section in Putnam County through hogs. Now he is equipping his farm so that beef steer will consume more of the roughage.

Hays Dill, '13, operates seven hundred acres north of Washington C. H. Hogs and cattle are his specialties, with the cattle deriving most of their sustenance from corn silage. Henry Coulson, ex-'17, is improving some Warren County land with silage fed steers. Delmer Jobe, '17, fed two car loads that were good enough for Swift & Co. to buy them from the feed lot.

But enough of the alumni and their beefy henchmen. In almost every country they may be found farming well and living better. Beef making is popular with many because it permits giving the entire time to the crops during the growing season and then employing the farm help in the winter months in cattle feeding. Corn and hogs may be the big money end of their businesses, but the steer has been found a valuable adjunct in transforming the roughage of the farm into beef and fertility.

In some cases as much as sixty to seventy pounds of silage is fed per day with about two and one-half pounds of cottonseed meal. This produces a good rate of gain, although generally not the maximum. The finish is generally satisfactory and the cattle are sold as "butcher stuff." The changing whims of the market are difficult to prognosticate, but in the past cattle fed on such a ration have sold remarkably close to corn fed steers.

Not a few men, in fact probably the majority of feeders perfer to make a higher finish by limiting the silage and then feeding from twelve to sixteen pounds of corn, two and one-half pounds of cottonseed meal and about three to four pounds of clover or alfalfa hay per day. Here again experimentally and in practice the silage fed steer

(Continued on page 554.)

SHEEP SHEARING CONTEST

Shearing a sheep in two minutes and twenty-three seconds was the record made in the speed event of the sheep shearing contest held at the Judging Pavilion by the Animal Husbandry Department, April 9. Wendell Beebee, a young man twenty-two years of age, made this record with a power machine and won the cup offered by the department of animal husbandry for the fastest sheep shearer at the contest.

In the shearing contest proper, J. G. Holway won the sweepstake cup, given by the *National Stockman and Farmer*. He won first prize in hand machine shearing with a score of 94.3; second place in professional hand shearing with a score of 92.8; third place in the power machine shearing scoring 87.7 points. The standard used in scoring was as follows: Quality of shearing, twenty-five points; number of cuts, ten points; handling of sheep, twenty-five points; speed in work, twenty points; handling of shears, five points; tying of fleece, fifteen points. The highest score was 94.7, made by G. A. Shaw in the professional hand shearing event. He likewise made the fastest time of the hand shearers which was ten minutes and thirteen seconds, and won the silver cup offered by *The Ohio Farmer*.

Three features were added to the contest this year. They consist of a wool grading demonstration, a lamb slaughtering and dressing contest, and a mutton boning exhibition.

The wool grading demonstration was given by Louis Hockheimer, of Wheeling, West Virginia. He graded two hundred and fifty pounds of wool, giving reasons for each grade.

STUDENTS DRESSING LAMBS

(Left to Right) C. H. Sprague, E. B. Raymond (Winner), R. W. Gardner, E. K. Edwards, W. L. Burbank, and R. G. Bruce.

An event that attracted unusual interest was the lamb dressing contest. Six students, who are taking instruction in butchering under C. T. Conklin, contested for the silver cup offered by George M. Wilber, of Marysville, for the most proficient work in slaughtering and dressing lambs. Edwin R. Raymond, '19, won the cup. During the contest Mr. Conklin discussed the more important points to be considered in slaughtering and dressing lambs.

Continued on page 550)

VISITATION OF THE 17-YEAR LOCUST

By E. W. MENDENHALL, State Horticultural Inspector

THE periodical cicada, known as the seventeen-year locust, promise to visit western Ohio this year for an indefinite stay. They move in cycles of seventeen years and in various broods, according to its appearance in different sections of the country. This year, Ohio will be visited by brood ten of the cicada and the scourge probably will sweep the entire state west of Columbus. The broods return to the same place in seventeen years with unfailing regularity, hence, their re-appearance has been designated by broods. The insect last appeared in western Ohio in 1902. Eastern Ohio had a visitation a few years ago, and in 1898, a brood appeared in north-eastern Ohio. Brood No. 18 is scheduled to appear in five states not including Ohio in May, 1919. Brood ten which will visit western Ohio this year is said to be common in twenty states and is most widely distributed.

The temperature of the soil, rain, and sunshine must be taken in consideration in accounting for the appearance of the insect. The underlying rocks are sharply defined factors of difference between the two areas, limestone rock of the western and the sandstone and shales of the eastern section of the state. The soils of the eastern area are therefore more acid than those of the western and the plants of the western area will have more lime in solution in their sap and built into their tissues than those in the eastern.

This is a question: "Will lime, in the soil on one side of the line and absence on the other, stimulate or retard development of the locust?" The glacial period may have had its influence in retarding the development of the species for different periods of time in diffierent localities.

Splitting off from the main brood whatever they may have been, have probably operated slowly, breaking the broods apart, a year at a time. Why our periodical locust should require so long a time to develop and why the adult should appear in different places in the United States during fourteen out of the cycle of seventeen years, it is impossible to say.

It is possible to conceive by the influence of environment the result in the acceleration or retardation of the development of an entire brood or broods of the insects such as variation in climatic conditions, geological changes or changed conditions of the topography of the country including the character of the vegetation. We find "flatwoods," swampy, malarial districts that were once in Ohio were unfavorable for the locust.

The periodical locust is very generally known in this country owing to the great numbers in which is appears at long intervals. The periodical appearance is due to the long time required for the nymphs to obtain their growth, either thirteen or seventeen years, and the fact that all members of one generation appear in the adult state at about the same time. The adult female lays her eggs in slits which she makes in twigs of trees which causes much injury to our young fruit trees and other plants.

A good way to protect young apple trees from the periodical cicada is by means of mosquito netting over the tops and paper wrapping around the trunks. Spraying applications are

(Continued on page 558)

THE COW TESTING ASSOCIATION

By M. R. WRIGHT, '20

(In this brief article, Mr. Wright describes this important factor in dairy herd improvement.)

The first cow testing association in the United States was formed in Newaygo County, Michigan, in 1905. While they have not increased in popularity as rapidly as in some other countries, there were organized in eight years, in thirty states, a total of one hundred and fifty association. By July 1, 1917, there were four hundred and fifty-nine associations in forty-three states, testing about two hundred and fifteen thousand cows.

The first one in Ohio was organized in 1910 in Geauga County. July 1, 1917, we had thirty; but on account of war conditions we have only one hundred and twenty-four now.

These associations are organized for the purpose of providing means for the cooperation of its members in ascertaining the relative merits of their cows, and the economical production of dairy products.

It usually consists of twenty-six members, who choose seven of their number as directors. These directors then elect a president, vice-president, secretary, and treasurer from their number.

Each member must sign a constitution and by-laws to which he agreed to abide for one year when the association is reorganized.

A man who has had some college experience is hired at a salary of from $40.00 to $80.00 per month and expenses. He is called "the tester," which is rather a misnomer as the testing is only a small part of his work. He stays at each member's home one day each month. He arrives there usually about 3 P. M., or in time for the evening milking, and as each cow is milked he weighs the milk and takes a sample for the Babcock test. He also weighs or estimates the weight of each of the different kinds of feed each cow consumes. Then after the samples of milk are tested he computes the following for each cow: the milk and butter fat production for each month; the value of her milk or butter-fat at the actual selling price; the total cost of feed; the net profit or loss; cost of one pound of butter-fat; cost of one hundred pounds of milk; and the returns for one dollar expended for feed. All this is tabulated in a record book kept by the cow owner. He also advises the member how to better balance his rations for larger net returns; and how to better care and more judiciously handle the herd.

The advantages of an association are many: In the first place it enables the cow owner to know just what each cow is doing. After a year, and frequently in less time, he knows whether a cow is a star boarder or is making him a profit. In this way he can sell his poor cows and make more money with less investment, and less labor than before with a larger herd. He knows from which cows it will pay him to raise his heifer calves; also whether his herd sire is prepotent and is getting a uniform lot of good producing heifers.

As a concrete example of the results of the testing work, we might take the Barnesville Association. In this association in 1914 the average butter-fat production was two hundred and seventy-three pounds per cow. In 1918 it was three hundred and fourteen pounds, an increased production of forty-one

(Continued on page 558)

OF

OHIO STATE UNIVERSITY

A Medium for Exchange of Ideas Between College and Farm

Published by the Students in the College of Agriculture. Established 1893.
Subscription Price, One Dollar the Year.
Entered at the Postoffice at Columbus, Ohio, as Second Class Matter.
Member of the Agricultural College Magazines, Associated.

POOLING THE WOOL SUPPLY

Obtaining the manufacturer's price less the freight charges and a small fee for commission is the opportunity placed before the wool growers of Ohio if they will send two million pounds of Ohio's wool to the central house at Columbus. This only means about one-sixth of the total clip for the state and it certainly will mean much to the wool growers. The idea is for local organizations to pool their wool supply send it to the central house at Columbus, where it will be graded and stored and a seventy-five per cent advance of the estimated value paid the grower. It then will be stored and later sold to the manufacturer and the grower will be paid in full after deducting the freight charge and a small commission for expenses, possibly five and one-half per cent of selling price.

This is the way the Ohio Sheep and Wool Growers Association (now eight thousand members) disposed of two hundred thousand pounds last year. In so doing they secured five cents to eight cents more per pound than local dealers were offering. The Association recently organized as a collecting and selling agency with each member as a stockholder. The necessary two million pounds must be guaranteed before the house at Columbus is assured. This is one way for the wool grower to keep in his pockets the extra dollars that have been slipping so easily to the various local dealers. Every wool grower in the state should be anxious to consign his wool to Columbus.

"AG" OPEN NIGHT

"Ag" Open Night, held at the Ohio Union, Saturday evening, April 26, was a grand revival of the pre-war spirit which existed in the College of Agriculture. During the last two years our interest has been primarily in the problems and agricultural issues of the great war. With the war over and many of the faculty and student body, who were in service, back in school, a college celebration of the open night type has a greater significance than it ever had before. We are now better able to appreciate the value of a social and democratic spirit. The open night is an excellent time to cultivate a spirit of that type. We need more get-together meetings of the entire college. These meetings create an acquaintanceship which is essential for a real college spirit and school loyalty. Many "Ag" alumni are criticized for a lack of loyalty to their college. This in part is no doubt due to their failure to cultivate a thoro acquaintanceship with the personnel of the college while in school. This is the result of a lack of meetings and celebrations of the "Ag" College as a whole. Our college can boast of a better college spirit than most colleges on the campus but at the same time there is much room for improvement.

A SUGGESTION

Hundreds of motor trucks made for use in the war are now at the disposal of the government. Many suggestions have been made for making use of them in a way that will promote the welfare of the country as a whole.

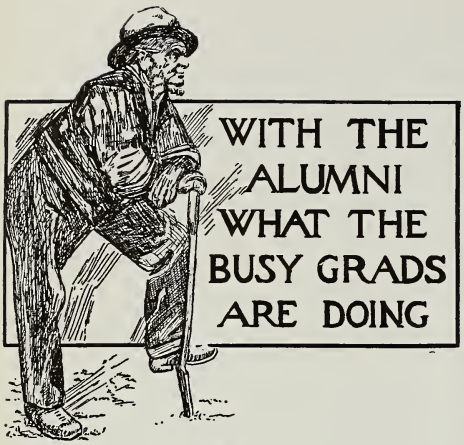
One suggestion is that these trucks be used by the centralized schools of the country for the transportation of the pupils to and from school. This would solve a great problem in many centralized districts. The time taken in traveling is one of the greatest criticisms to centralization. Motor trucks are being used with satisfaction by many centralized schools in Ohio at the present time. We think it would be worth while for school superintendents to get in communication with their congressman and have the proposition put before the proper officials at Washington. A rational use of motor trucks for transportation of school children made possible by a little generosity of the government would be a great impetus to rural education.

A CORRECTION

In a recent issue we made the statement that THE STUDENT was the only agricultural college magazine that continued publication thru the war. Since then we have been informed that the *Purdue Agriculturist*, the *Iowa Agriculturist*, and the *Oregon Countrymen* also were able to continue publication.

NITRATE FERTILIZER

The commercial fixation of nitrogen from the air was developed greatly during the war. It is likely to prove an important source of nitrate in the future. It is estimated that when the government plants are working at full capacity, they will produce six times as much nitrate per year as was used in this country in 1914. If this proves true we would expect cheaper nitrate in the near future, and there will be little reason for purchasing a mixed grade of fertilizer containing one, two, or even four per cent of nitrogen. There is reason to be optimistic over the future of nitrate fertilizers.



'00

Elmer O. Fippin, professor of Soil Technology at Cornell University, has accepted the position of director of the agricultural bureau of the National Lime Association to become effective at the close of the present collegiate year. He has been connected with the Soils Department at Cornell since 1905. Since 1912 he has confined his attention to extension work and the supervision of the soil survey work of New York state.

'03

O. E. Jennings is curator of botany at the Carnegie Museum and professor of botany at the University of Pittsburg. He has served as general secretary of the American Association for the Advancement of Science and as the secretary of the Botanical Society of Western Pennsylvania. He is the editor of "The Bryologist" and author of "A Manual of the Mosses of Western Pennsylvania."

'04

Clifford C. Hatfield spent the past year in Russia, in connection with the rural work of the Y. M. C. A., as director of the Y. M. C. A. agricultural expedition on the Volga river. At present he is working on a similar expedition for Siberia, which will operate on the Trans-Siberian railway.

'12

D. D. Leyda is teaching in the high school at Leyro, Ohio.

L. L. Heller was in Columbus a few weeks ago attending the meeting of the National Wool Growers Association, of which he is asisstant secretary. As yet he has been unable to find a suitable partner and seems perfectly content with bachelor life. His address is the Union Stock Yards, Chicago.

'13.

Clayton L. Long, formerly County Agent of Lake County has resigned to become manager of the Goodhold Farm which is located near Painesville, Ohio.

Louis S. Work, who was formerly manager of the Green Condensed Milk Company of Xenia, is now Superintendent of the Springfield Dairy Products Company of Springfield, Ohio.

Clell Solether is engaged in general farming at Jerry, Ohio.

'14.

Fred N. Winkler, who was formerly in the Life Insurance business, is now a grain broker in Cincinnati.

C. H. Riggs is employed by the Shaowa Agricultural Experiment Station at Funen, China.

N. R. Elliot is teaching in the agricultural college at Lexington, Kentucky.

'15

W. T. Stanton, who has been teaching in the Cleveland schools, has accepted a position as state agricultural supervisor of Rhode Island.

W. W. Ellenwood is operating a farm at Coalton, Ohio.

L. L. Rummel is associate editor of the *Ohio Farmer*.

T. W. McKinley has resumed his work with the Indian Forest Service, with headquarters at Roque, California. He secured a commission of 2nd lieutenant when in the army.

'16

E. L. Calland is forester and horticulturist for the Rolling Rock Farms at Ligoniet, Pennsylvania.

O. D. Bliss is operating a farm at Avon, Ohio.

C. R. Gaiser is farming at Brunswick, Ohio.

'17

A. H. Detchon died of pneumonia recently while doing work for the gas defense division of the army at Boston, Mass. He attended the officers' training school at Camp Gordon, Georgia, from May until October, 1918.

S. W. Leonard is nurseryman at Wyomissing, Tennessee.

Brooks D. Drain, formerly assistant horticulturist at Ohio State University, is now connected with the horticultural department of the Massachusetts Agricultural College.

J. H. Hejna is doing landscape work at Cambridge, Mass.

'18

Gordon Dixon is acting as agricultural engineer on the Hurdalta Ranch in Alberta, Canada.

H. E. Jacobs, assistant in horticulture, is accompanying Professor Griggs on his trip to Alaska. William Henning, '21, and August Miller, '21, are also in Professor Grigg's party.

Walter L. Darnell, ex-'18, recently received his discharge from the army and is now a salesman for the Ohio Buick Company at Columbus.

Ex-'19

Fred Minshill has been with the Tenth Forest Engineers in France.

George T. Dustman, recently returned from active service in France, will return to the Yellowstone National Park to take up his work as a ranger.

THE FARMER AND THE NEW DAY, by Kenyon L. Butterfield, President of Massachusetts Agricultural College. The Macmillan Book Company, publishers. 300 pages.

This book states the larger problems which the farmer must face during the reconstruction period and indicates the significance and character of the relation between him and the rest of society in the new era. The author divides his discussion into three main sections. Under the first, The Rural Problem, he takes up such questions as, Is the Farmer Coming to His Own?, The Challenge of the New Day, The Rural Problem, Farm Profits and Rural Welfare, and Farming That is Not Farming. The second section, Rural Organization, includes The Education of Rural People, The Organization of American Agriculture and Country Life, and The Statesmanship of Rural Affairs. A Rural Democracy is the title of the third section in which is discussed The Farmer and the New Democracy, An American Program of Rural Reconstruction and The Urge of the New Day. The appendix includes a Program for Food Production and Conservation and an American Agricultural Policy. As a whole the book gives some light on the future problems of the farmer and what he must do to solve them.—G. F. J.

RURAL LIFE, by Charles Josiah Galpin. The Century Company, New York. 1918. 381 pages. Illustrated. $2.50.

Professor Galpin is a member of the faculty of the University of Wisconsin and the book may be said to have been built up by a "case method" study of rural organization in Wis-

consin. The author holds to the sound belief that the rural life problem is a problem repeated in miniature for each local community which must solve it under its own conditions. The suggestions which are offered have worked well in Wisconsin.

"The Psychology of Farm Life," "The Structure of Rural Society," "Rural Social Centers," "Country Fetes," and "Farmers' Churches" are some of the chapter headings. The book should be interesting to the farmer and every other person who is interested in him.—L. O. LANTIS.

"COOPERATIVE MARKETING," by W. W. Cumberland, 1917, is published by Princeton University Press. 225 pages.

"The purpose of their book," as the author states in the preface, "is to point the way toward a better system of food distribution." This he has proceeded to do not by means of the overworked exhortations common to books on cooperation urging farmers to "stick together" but by an analytical study of the plan of organization and method of operation of the California Citrus Fruit Growers' Exchange and its subsidiary organizations.

The first chapter is devoted to a consideration of food distribution as a field for cooperation. In this chapter the author points out first the need of some way of lessening the cost of getting our crops from producer to consumer. The effect of our present situation, he says, is threefold: "(1) Consumers suffer through failure to obtain a properly balanced diet; (2) Producers suffer through inability to market large portions of their crops, for there are always more small apples than large; (3) Society as a whole suffers through the waster of commodities which, under a less expensive method would have an economic value. There is no market for small apples at four cents a pound, but at one cent a pound the demand would be enormous.

In the second place he points out that three "essentials for a successful plan for simplifying the marketing situation are: (1) It must not be based on self-interest alone; (2) it must not expect unduly to alter long established customers; (3) it must be based on principles of efficiency, involving some sort of concerted action on the part of producers."

The major portion of the book is devoted to a consideration of the plan of organization and method of operation of the exchange system in California. Then in Chapter IX he discusses the "value of the exchange system as measured by results in California," and in the next chapter the "benefits of cooperation for producers seeking a market." That the system has been beneficial to producers is pretty clearly shown by the fact that rapidly increasing crops were marketed at good prices. That it has been beneficial to consumers is also fairly clearly indicated by the fact that prices of certain fruits have not increased so rapidly as have prices of many other commodities, although a better product is being marketed.

—H. E. ERDMAN.

"INJURIOUS INSECTS AND USEFUL BIRDS," by F. L. Washburn, Professor of Entomology, University of Minnesota. J. B. Lippincott Co., Philadelphia, Pa. Price, net, $2.00. With the AGRICULTURAL STUDENT, one year, $2.75.

With a national reputation in the field of economic entomology, Prof. Washburn is an authority on the subject of insect pests and in this recent addition to the "Lippincott Farm Manuals" he covers the subject in a positive conclusive manner.

The first part of the book treats the subject of entomology in a complete, non-technical way that is easily understood by students and farmers. All injurious insects in relation to plants, animals, and man are described. Their habits and life cycles are discussed and methods of control suggested. Beneficial insects and insect enemies are also discussed. The chapter on insect collection and preservation should be of interest to all students of entomology.

The second part of the book is devoted to birds and their economic relation to agriculture. This covers a field of interest to many people, and treats a universal subject in an attractive way. This part of the book has three especially good color plates of common birds.

The last chapter of the book takes up the subject of four-footed pests of the farm. In this chapter the injuries of a number of common animals are discussed and practical remedies are suggested.

The book is well adapted as a text and reference book for high schools and agricultural colleges, and should be a valuable addition to the library of every progressive farmer, orchardist, and vegetable grower.—O. J. S.

Home Economics Department

HOME AGENT WORK IN OHIO

By LENA BUMPUS

(Miss Bumpus is the State Leader in charge of the County Home Demonstration Agents. She gives in this article a survey of the duties of the Home Agents, the local agencies cooperating with them, and the organization and history of the work.)

NO matter in what profession one is engaged, he appreciates the value not only of meeting with those having the same interests and problems but also of seeking the advice of specialists in his own line.

A few years ago, the Federal Government cooperating with State and County Governments, realized the need of the farmer for having an agricultural advisor in the capacity of the County Agricultural Agent. In the counties already having an agricultural agent with a Farm Bureau organization, which organization represents homes as well as farms, it is possible for the women to have the advantage of a specialist who aids in solving home and community problems. The Home Demonstration Agent may be located in either rural or city communities, and her services in either place are practically the same.

SCHOOL LUNCH WORK IN MANY CENTRALIZED SCHOOLS AND HIGH SCHOOLS IS CARRIED ON UNDER THE SUPERVISION OF THE HOME AGENT.

THE HOME AGENT

She must be a woman with training in Home Economics and practical experience in home making. Her work requires a share of tact and sympathy with all classes. The Home Agent is in charge of the Home Economics Extension work in the county and organizes and directs it under the superivision of

the State University. The duties of a Home Agent may be summarized as follows:

1. She works with the organizations already existing in the county, such as mothers' clubs, farm women's clubs, community clubs, granges, farmers' institutes and extension schools.

2. She arranges for lectures and demonstrations on such topics as food, clothing, shelter, sanitation, health, household management, and house decoration.

3. She cooperates with the schools of the county in carrying on school lunches, club work and similar school enterprises. Her services are also to be had as an advisor to the county authorities on all questions of food, sanitation, and health in county institutions.

4. She will endeavor to furnish information on special subjects, and being in close touch with the Department of Home Economics at the State University, and with the United States Department of Agriculture, she will be able to obtain, not only literature, but the assistance of specialist in the various lines of work.

5. Headquarters are maintained in the office of the County Agricultural Agent, where the Home Demonstration Agent may be consulted on questions of interest, and where arrangements may be made for special cooperation with clubs, schools and private homes. Literature on various home economics subjects is to be found here, and the office should be regarded as headquarters for all home economics interests of the County.

EXHIBITS IN FOODS AND SEWING ARE ARRANGED BY THE HOME AGENTS

The salary of the Home Agent is paid cooperatively by the United States Department of Agriculture and the State Universtiy. The farm bureau provides office space, a desk, filing space, stenographic help and office supplies.

COOPERATING AGENCIES

In all cases the Farm Bureau is the cooperating agency for Rural Home Demonstration work which becomes another department of this organization.

(Continued on page 552)

HOME ECONOMICS Alumnae Record

Miss Ellen Miller, '16, has accepted the position of Home Demonstration Agent at Large, in the Extension Service. She gives special assistance in clothing and shelter.

Miss Roxie Millikin, '18, is teaching Home Economics in the High School at Plattsburg, Ohio.

Miss Florence Darrah, '18, has returned to her home in Macksburg, Ohio. She was previously doing bacteriological work at Camp Sherman.

Miss Gertrude Methias, '16, will enter Mount Sinai Hospital, Cleveland, Ohio, in June, 1919, as student dietitian. She has been teaching Domestic Science in one of the Cleveland city schools.

Miss Laura Heston, '17, is teaching in the Home Economics department of the Bowling Green Normal School.

Miss Josephine Hamblin, '18, has accepted the position of private secretary to Miss Edna N. White, head of the Department of Home Economics, at Ohio State University.

Miss Elsie Steiger, '18, is an assistant in the Home Economics Department of Ohio State University.

Miss Agnes Brady, '14, has been teaching Home Economics in East High School, Columbus, Ohio, since 1917. She was formerly an instructor in Textiles at Ohio State Universtiy.

Miss Mary Hershberger, '17, is teaching Domestic Science in the high school at Lancaster, Ohio.

Miss Leah Aschah, '18, is Rural Home Demonstration Agent of Huron County.

Miss Mayme Lewis, '18, is Supervisor of Dietitics at Foote Hospital, Jackson, Michigan.

Miss Bertha Hays, '18, is an assistant in the Department of Home Economics at Ohio State University.

Miss Norma Bradley, ex-'19, is assistant dietitian at Mount Sinai Hospital, Cleveland, Ohio.

Miss Jesse Whitacre, '15, has had the position of Professor of Foods and Dietetics for the past year, in the Agricultural College at Logan, Utah. She was formerly connected with the Extension Service of the Ohio State University.

Miss Lois Hunter, '18, has returned to her home in Buckeye City. For the past year she had been doing Bacteriological work at Otisville, New York.

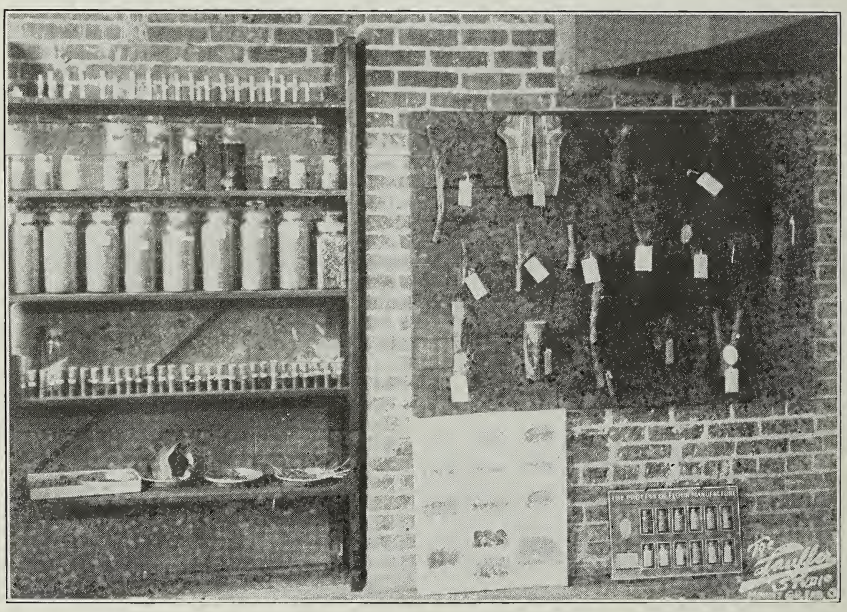
Mr. and Mrs. Ralph Jordan (nee Helen Mougey, '17) are living at Cleveland, Ohio. Mrs. Jordan was Urban Home Demonstration Agent of Youngstown, Ohio, previous to her marriage, last January.

ILLUSTRATIVE MATERIAL FOR SECONDARY AGRICULTURAL INSTRUCTION

By L. N. GEIGER

(Mr. Geiger is the Smith-Hughes agricultural instructor in the Edison High School. Considering the time he has been in the work, he probably has the best collection of illustrative material of any department of its kind in the state. Read how he collected it.)

THE most effective teaching is done through the eye and in order to do this in agriculture a good line of illustrative material is necessary. The collection and preservation of such material is one of the important duties of the high school agricultural instructor. Vast amounts of such material can be collected locally and large quantities can be had from numerous other sources by the mere asking.



A NEAT AND CONVENIENT ARRANGEMENT OF ILLUSTRATIVE MATERIAL

No agricultural instructor need put himself out of the way in collecting such material. This can be done most easily while on visitation trips within the community. The agriculturist must visit the home projects of his students. He should not set to this task with the one vision, that of project supervision; yet this should by all means be the main object. He should be on the lookout to improve his knowledge of the agricultural conditions of his community, and incidentally secure whatever illustrative material he might see that would be of use in the class room or laboratory.

I have often been talking with farmers who have become interested in some certain thing, wheat for instance. They often ask me to look it over to see what I think about it. I look it over and if I think it desirable I ask for two or three quarts for use in the laboratory.

Of course, I aim to be prepared to

take back all such material that I might be successful in obtaining. After filling the container with wheat the same farmer will often say, "Here is some oats, would you like a sample of it?" I would very likely ask him what variety he had. If it was one I did not happen to have, I would say, "Yes, I would be glad to have a good sample of it." I have been successful in obtaining as many as six or eight different kinds of illustrative material from one farmer in just the one talk.

GRAIN CABINET AT THE EDISON SCHOOL

These grain samples have been mounted or preserved in two-quart chemical bottles, which a farmer gave the department for the cleaning. Originally, the bottles were used in a drug store in town.

Instructors can also make good use of the boys in their classes. I have the boys bring in samples quite often. I obtained corn for judging this way.

We have collected samples of seeds of forty of the common weeds. These were collected by the boys at home, on their way to school, while on field trips, and also by myself while driving along the road when visiting the boys and farmers of the community.

Many of us got on the job too late last summer to get good head samples of grains and grasses. But nevertheless, we have been able to get a few head samples. Now men, spring and summer are on the way, keep an open eye or two and you can get all such material you want, only for the asking.

Plant diseases are abundant in most localities. Such things as diseased fruit, scab of potatoes, and other material of this nature can be successfully preserved in a three or four per cent solution of formaldehyde.

Your local dealers will cooperate with you, by giving a sample of the different stock feeds, commercial feeds, and other material which they handle.

At least, I have found this true. These may be preserved in screw-cap bottles ready for use in the class room.

Pictures of purebred livestock make desirable illustrative material for teaching animal husbandry. These can be obtained by writing to the secretaries of the different breeding associations, or by writing to breeders for a copy of their sales catalogue.

These pictures might be mounted separately on a cardboard and bound with passe partout tape. The best one of each type or breed could be framed in some inexpensive frame. I have used old discarded picture frames from the other rooms of the school building, and they work very well too. Others I have decided to mount collectively on a large cardboard twenty-two inches by twenty-eight inches. In such a case I would take representative pictures of a breed and mount as a breed collection.

Various fertilizer samples, feed samples, and other lines of illustrative material can be secured by writing to the companies that handle and make the products.

Diseases of farm crops, garden crops, fruits, etc., can be mounted in riker-mounts. Insects can be mounted on pins, in riker-mounts, or preserved in a three per cent solution of formaldehyde.

The screen cabinet, a picture of which accompanies this article is used in our school to store the head samples of grains, grasses, legumes, etc.

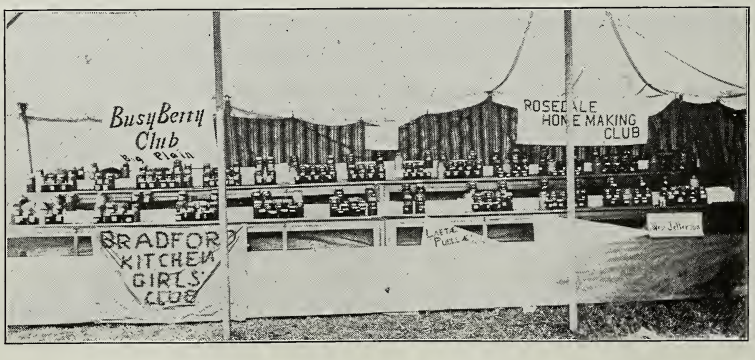
This cabinet was made with the idea of obtaining something that would be mouse-proof. At the same time it admits a free circulation of air and keeps them day.

In the left of the picture showing the pruning mount, is shown a shelving on which to store the grain, weed seeds, feeds, and other samples of material mounted in satisfactory containers to be so stored.

On the right is shown a mounted collection of careless pruning, neglects of the farm orchard, how to make good cuts in pruning, and the protection of large cuts until healed over.

This collection which was obtained from three ordinary farm orchards of the community, might have been taken from one. It is mounted on light lumber by means of a number fourteen wire, or wire used in wiring bales of hay. This collection was prepared last fall for exhibition at the County Fair where it created quite a bit of interest. It attracts the eye of every farmer entering the agricultural room of our school.

The time is approaching when good illustrative material will be in abudance. It only takes an open eye or two and a little tact to obtain it.



AGRICULTURAL INSTRUCTION AT THE FARMERS' FIRESIDE

By Geo. F. Johnson, '19

(How twelve thousand rural people have secured instruction in important agricultural subjects.)

THE Extension Service of the College of Agriculture at the Ohio State University, thru its correspondence courses has made it possible for every farmer in Ohio to secure instruction in the important subjects of agriculture at their own firesides, free of charge. The plan is simply this. A number of lessons on each of twenty-four important agricultural subjects, of which the most popular are Soil Fertility, Vegetable Gardening, Poultry Farming, Dairy Farming, Farm Power, and Farm Accounts, have been carefully prepared by the college experts in each department. A person who wishes to take a course, simply writes to the extension department and makes known his or her wishes. The first lesson of that course is mailed with instructions. The person studies the lesson, writes out the examination questions at the end of lesson and sends them back to the college for correction and grading. This paper is then returned to the pupil with the second lesson. This process continue until the series of lessons is completed.

These correspondance courses were first offered in 1915. Since then twelve thousand people have taken advantage of the opportunities the courses offer to secure agricultural education. Last year there were fifteen thousand four hundred fifty-two lessons mailed to approximately fifteen hundred persons. A total of six hundred ninety-nine persons completed courses during the year. It is estimated that about 30 per cent of the persons enrolled finish their courses. However, some persons complete more than one course as is shown by the following figures secured about a year ago: One hundred forty-nine have completed two coures, thirty-four, three courses; ten, four courses; seven, five courses; two, seven courses: and one, eight courses. It is evident from these figures that a person who takes courses year after year and applies himself properly, can secure a well-rounded agricultural education.

These lessons have been prepared particularly for the person who has not had the advantage of a secondary education. They have been written in a clear, plain, simple and direct manner that is easy to understand. Any person who has completed an elementary education should be able to handle the lessons. The agricultural instructor in the high school should get the boys of his community, who are not taking high school work, interested in the correspondence courses. He should hold weekly or bi-weekly meetings for these boys to discuss the lessons and work out the problems and questions. It appears that an arrangement of this kind would prove more practical and beneficial than short winter courses like those that have been conducted in several Smith-Hughes High Schools during the past winter.

During the last year, the call to military service and the pressing demand for labor had retarded the development of the courses. During January, 1918, one thousand forty-nine lessons were mailed while for the same period in 1919, only nine hundred six were mailed. However, the number is rapidly increasing and by the end of April

the mark of a year ago is expected to be passed.

It is interesting to note that a number of persons, who were taking lessons when called into the service, were so much interested in the course that they had the lessons mailed to them at the cantonment, and were thus enabled to study agriculture and train for military service at the same time.

Extension Circular No. 37 gives a complete list and full description of the courses offered by the Extension service. It can be secured by writing to J. C. McClintock, Supervisor of Correspondence Courses, Ohio State University.

GET THE CORN PULLERS

Many good fields of corn are damaged annually by crows. These pests once allowed to start their work in a corn field will become a source of trouble and will do an inestimable amount of damage. They can be successfully controlled, however, with but little time and expense. The best method that I have found of destroying them is by poisoning. Strychnine gives about the best results as it is a strong poison and does not discolor the corn kernels to which it is applied. Twenty-five cents worth will poison one quart of shelled corn thoroughly. Allow the corn to soak in the solution of strychnine and water until the kernels are well soaked. Scatter this corn on the field just after the corn crop has been planted. If crows are numerous, some will pick the corn up in a few days and the others, becoming suspicious, will leave the locality; so by the time the corn comes up it will not be bothered. It is a good plan to hang up a few of the dead crows on poles at different places in the field. Crows seldom bother a field when there are dead ones about. H. E. W.

FROST DAMAGE SHOWS SLOWLY ON FRUIT CROP

"It will be sometime before the exact damage of the recent frosts can be calculated," states W. J. Green, horticulturist at the Ohio Experiment Station. "Practically the only reliable data are the temperatures collected by the Weather Bureau and where the temperatures reported were below or near 26 degrees considerable damage has been done."

Testing of the fruit buds does not always reveal the damage done by the frost. Oftentimes a peach bud or developing fruit the size of a shot will seem to be perfectly normal but in a few weeks' time it will blight and fall to the ground. There is no definite way of telling the exact damage done to fruit until the drops are estimated."

Professor Green points out that even when 5 per cent. of the peach blossoms are unharmed by frost there is still a chance of having a fair crop as nature produces blossoms so much more in excess than the number of fruits that are really set.

The weather reports concerning the temperature in the peach-producing districts has not been below 31 degrees so that probably little damage has been done in those sections.

SHEEP SHEARING CONTEST

(Continued from page 531)

The mutton boning exhibition was given by L. L. Heller, a representative of the National Wool Growers' Association. He showed how to take the bones from the shoulder and cheaper cuts of mutton so as to make them comparable with the higher priced cuts in quality and economic value.

This was the tenth sheep shearing contest to be held at the University by the Animal Husbandry Department. It has been made an annual spring event during the last few years and from the interest shown this spring it is likely to continue to be an important spring attraction at the College of Agriculture for the farmers interested in sheep.

G. F. J.

HOME AGENT WORK

(Carried from page 540)

In many places, Urban Home Demonstration work has been established and its agents cooperate with County Home Agents.

In the past two years the Home Agents have had splendid cooperation with organizations such as the Food Administration, Women's Committee of the Council of National Defense, the Patriotic League, the Red Cross, and such other organizations as Boards of Education, granges, chamber of commerce, Health Departments, Associated Charities, Parent-Teachers Associations, Women's Clubs, Y. W. C. A., stores, factories and newspapers.

(Continued on page 556)

FROM CORNSTALKS TO PORTERHOUSE

(Continued from page 529)

has financially outstripped the one receiving shock corn because so much more roughage is consumed in proportion to grain when silage is fed.

Still others would prefer to limit the corn to about four pounds per head per day and then allow the steers all the silage they will consume together with the orthodox two and one-half pounds of cottonseed meal per day, and by the way this is the ration which proved the most profitable in the Iowa Agricultural College experiments of 1916 and 1917. Steers so fed sold within thirty cents per hundred pounds of those getting a full feed of sixteen pounds of corn per day.

In Darke County, Ohio, there are two very successful steer feeders, C. C.

Fisher and W. W. McClure, who annually feed about three hundred head of white face calves on a ration of about four to six pounds of corn, two and one-half pounds of cotton seed meal, alfalfa hay and the maximum amount of silage. Gains on these calves have gone well over two pounds per day. The 1918 steers went out of these feed lots with a six cent margin and made a profit of $50.00 per steer. One load from these feeder lots was sold at the 1918 International Live Stock Exposition at $25.25 per hundred pounds. Surely the maximum amount of roughage was turned into these beeves.

Another case of cashing in on roughage through the steer is that of Thomas Johnson of Camp Chase, who is ensiling the waste from sweet corn canneries at West Jefferson, Ohio, and then trucking the silage to his feed lots. This sweet corn by-product of husks, corn cobs and waste corn seems to be taking the place of silage in the ration. Near Mason, Ohio, eighty-seven cows were recently seen that had made an average daily gain of one and one-fourth pounds on a pile of cannery husks that had ensiled themselves, through the rotting of the outside of the stock. Nothing but this cheap grade of silage had wintered these cows well.

A higher level of crop prices and meat prices means a greater appraisal on all roughage. Higher prices for meat results in great demands for cheaper cuts and cattle of less finish. Such cattle can be efficiently produced on silage even under present day high prices.

Can the beef steer come back? It seems as though he can; especially on farms where his bill-of-fare is silage a la carte.

HOME AGENT WORK

(Carried from page 552)

HISTORY

The County Home Demonstration Agents' work is carried out under the provisions of the War Emergency appropriation bill passed by Congress in May, 1917. The Rural Home Demonstration work began in Ohio in 1917. The first county, Highland, was organized in September of that year and since that time, twenty-three counties have been organized or are in the process of organization. Urban Home Demonstration work has been organized in nine of the largest cities of the State.

Up to this time the activities have taken on the character of war work, with most emphasis on the food emergencies, but there have been many interesting developments that have contributed much toward the establishment of the work on a permanent basis.

17-YEAR LOCUST

(Continued from page 532)

of little effect. The eggs hatch in about six weeks. Young nymphs, finding no attraction in the sunshine and flowers, drop to the ground and bury themselves in the earth, thus beginning a voluntary seclusion which lasts for year. They live by sucking the juices from the roots of trees. In May of the seventeenth year after their retirement in the earth, they crawl up to the surface of the ground. They come forth, broad-headed, broad-bodied and clear-winged, creatures, well fitted to get all the experience possible out of the world. After a few weeks they sing their last song, lay their eggs and pass away.

In the south, these insects live only thirteen years under ground, but in the north it takes seventeen years for a nymph to reach maturity. More than twenty distinct broods of these species have been traced out. In many localities several broods co-exist. This explains the fact that in such places this insect appears several times during a single period of seventeen years.

For reference on this subject see Bulletin 311, Ohio Experiment Station, Wooster, Ohio, and Bulletin 14 of the United States Department of Agriculture, Washington, D. C.

COW TESTING ASSOCIATION

(Continued from page 533)

pounds per cow with the four hundred and fifty cows they have in their association it means an increased production of eighteen thousand pounds of butter-fat per year.

As the member's profit increases, or his loss becomes less, his interest in and enthusiasm for the business increases, he takes more pride in the herd, he feeds more of better balanced rations, and the improvement in his herd is soon noticed.

HOME-MADE LICE REMEDY

One of the cheapest home-made lice powders for poultry is made by mixing three parts of gasoline and one part of crude carbolic acid with as much plaster of Paris as the liquid will moisten, as determined by the Ohio Experiment Station. The powder is allowed to dry before using; it may be kept in an air-tight container where it retains its strength for a long period. The powder is inflammable and must be kept away from fire.

ERADICATE BARBERRY

A campaign for the eradication of the common barberry, which is known to cause considerable loss in wheat growing because it harbors the spores of the black stem rust of wheat, will be carried on in Ohio during the present summer. The campaign is being planned by officials from the United States Department of Agriculture, Washington, D. C. Last year much work was done in barberry eradication to conserve wheat for war uses.

SOYBEANS VALUABLE AS SUBSTITUTE FARM CROP

Although less than seven thousand acres of soybeans are grown in Ohio annually this crop promises to become much more important than oats in farm rotations because of its high feeding value and soil-building qualities, crop specialists at the Ohio Experiment Station declare. Tests show that practically any of the tillable land in Ohio will grow soybeans successfully. Their best use is as a substitute crop for clover and grass where new seedings are a failure.

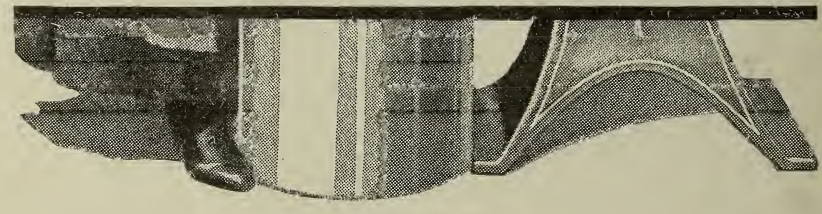
After six years of testing, in which more than seventy varieties have been tried in pure line strains, the Ito San, Elton, Auburn and Ohio have yielded more than four thousand eight hundred pounds of hay per acre. Soybean hay is valuable for feeding livestock and the grain generally sells at a high rate per bushel on the market.

Soybeans have practically the same climatic and seasonal range as corn and deserve a much wider recognition as a farm crop, specialists point out.

DE LAVAL

is used by 2,325,000 farmers
who wanted (and got) the best,
closest skimming and most durable

CREAM SEPARATOR



THE DE LAVAL SEPARATOR COMPANY

165 Broadway, New York 29 E. Madison St., Chicago